

REMARKS

No claims have been amended or added. Claims 1, 4-5, 8-13 and 15-16 were canceled by prior amendment. Accordingly, claims 2-3, 6-7, 14 and 17-19 remain pending in this application.

35 U.S.C. § 103

Claims 2, 3, 6, 7, 14 and 17-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over O'Hara et al., US Pat. App. Pub. 20050139295, (hereafter "O'Hara"). These rejections are traversed as follows.

O'Hara teaches a nickel-based superalloy that increases the strength of a single crystal (i.e., the crystal grain) or at least several directionally-oriented polycrystals (see, e.g., paragraph [0019]). Under Applicants' invention, on the other hand, the strength of the grain boundary is improved as well as the strength in the crystal grain. Thus, there is an essential difference between the properties and purpose of the alloy structures of O'Hara and the present invention.

In the alloys disclosed in O'Hara, the hafnium content is 1% or less, as discussed in the Office Action at paragraphs 3 and 4 (specifically, 0.3% - 1%). In Applicants' claimed alloy, the hafnium content is 1.1% - 2.5%. The difference in the hafnium content has been discovered by Applicants to accomplish the purpose set forth above, namely, to improve the strength of the grain boundary.

As illustrated in FIG. 8 of the present application, the grain boundary strength does not improve much when the hafnium content is 1% or less. However, FIG. 8

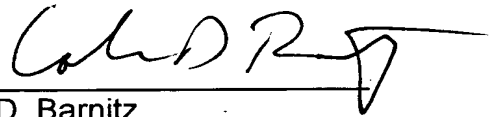
illustrates that the grain boundary strength improves greatly when the hafnium content is 1.1% or more. Thus, the hafnium range in the alloy of Applicants' claimed invention is directed to an alloy having substantially different properties than the alloy taught by O'Hara, namely, a substantially improved grain boundary strength. As demonstrated by FIG. 8, one skilled in the art would not expect the improved grain boundary strength achieved by Applicants' claimed alloy from knowledge of O'Hara's alloy at the time of the invention. Accordingly, claims 2-3, 6-7, 14 and 17-19 are patentable over O'Hara and the other art of record, whether taken singly, or in combination. Applicants respectfully request reconsideration and withdrawal of the claim rejections, and allowance of the claims.

Conclusion

In view of the foregoing, Applicants respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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